

SEQUENCE LISTING

<110> Galilaeus Oy

<120> The gene cluster involved in aclacinomycin biosynthesis, and its use for genetic engineering

<130> 33318

<140>
<141>

<160> 16

<170> PatentIn Ver. 2.2

<210> 1

<211> 662

<212> PRT

<213> *Streptomyces galilaeus*

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20 25 30

Asp Ala Ala Pro Arg Leu Pro Ala Gly Leu Ala Glu Arg Leu Val Thr
35 40 45

Arg Leu Leu Asp Ala Gly Leu Leu Cys Ala Tyr Pro Gln Asp Gly Ala
50 55 60

Asp Arg Pro Glu Arg Ala Tyr Arg Ser Leu Thr Gly Leu Gln Ala Arg
65 70 75 80

Ser Ala Asp Ala Arg Asp Ala Val Leu Ala Ala Val Asp Leu Thr Gly
85 90 95

Asp Ala Glu Ser Pro Leu Pro Glu Ala Val Ser Ala Ala Gly Leu Arg
100 105 110

Ala Ala Ala Pro Gly Glu His Ala Ala Leu Thr Leu Val Leu Cys His
115 120 125

Asp Tyr Leu Asp Pro Arg Leu Ser Ala Leu Asp Ala Glu His Arg Ala
130 135 140

Thr Gly Arg Gly Trp Leu Pro Val Arg Ala Asn Gly Thr His Leu Trp
145 150 155 160

Ile Gly Pro Phe Phe Ser Ala Gly Asp Gly Pro Cys Trp Ser Cys Leu
165 170 175

Ala Asp Arg Leu Arg Leu Arg Arg Gly Glu Ala Tyr Val Gln His
180 185 190

Arg Leu Gly His Ser Gly Pro Ala Val His Arg Arg Ala Tyr Leu Pro
 195 200 205
 Ala Gly Arg Ala Ala Ala Leu Gln Leu Ala Leu Leu Glu Ala Gly Lys
 210 215 220
 Trp Leu Ser Gly His Arg Asp Thr Val Gln Asp Ser Leu Trp Arg Leu
 225 230 235 240
 Asp Thr Arg Thr Leu Glu Ser Ser Arg His Pro Val Arg Arg Arg Pro
 245 250 255
 Gln Cys Ser Arg Cys Gly Asp Pro Leu Leu Val Arg Asp Arg Val Ser
 260 265 270
 Ala Pro Val Val Leu Ser Ser Arg Pro Val Arg Asp Glu Ser Gly Gly
 275 280 285
 Gly His Arg Thr Phe Gly Pro Gln Glu Met Leu Asp Arg Tyr Gly His
 290 295 300
 Leu Val Asp Pro Val Thr Gly Val Val Gly Glu Ile Arg Arg Asp Pro
 305 310 315 320
 Arg Gly Pro Glu Phe Leu Asn Cys Phe Thr Arg Ser Arg Cys Arg Leu
 325 330 335
 Gly Pro Arg Ala Ala Pro Pro Ala Leu His Ser Pro Leu Arg Ser Pro
 340 345 350
 Gly Ser Gly Lys Gly Val Thr Glu Leu His Ala Arg Val Ser Ala Leu
 355 360 365
 Ala Glu Ala Leu Glu Arg Cys Ser Gly Tyr Phe Gln Gly Asp Glu Pro
 370 375 380
 Arg Arg Arg Gly Ser Tyr Arg Glu Leu Ala Gly Leu Ala Val His Pro
 385 390 395 400
 Asp Ser Val Gln Leu Phe Asp Arg Arg Gln Phe Glu Asp Arg Arg Ala
 405 410 415
 Trp Asn Arg Ala His Gly Pro Phe His Gln Val Thr Glu Pro Phe Asp
 420 425 430
 Glu Asp Ala Pro Ile Asp Trp Thr Pro Val Trp Ser Leu Thr Glu Arg
 435 440 445
 Arg Gln Arg Leu Ala Pro Thr Ser Leu Leu Tyr Tyr Asn Ala Pro Asp
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<210> 2
<211> 272
<212> PRT
<213> *Streptomyces galilaeus*

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Ala Ile His Ala Asn Arg Val Leu Pro Val Gly Thr Leu Met Glu Glu
      35          40          45

Ile Trp Gly Thr Glu Pro Pro Gln Ser Ala Leu Ala Thr Leu His Thr
      50          55          60

Tyr Ile Leu Gln Leu Arg Arg Arg Leu Thr Ala Ala Tyr Gly Asp Glu
      65          70          75          80

Gly Gly Val Ser Ala Lys Asp Val Leu Val Thr Gln Tyr Gly Gly Tyr
      85          90          95

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Cys Trp Gln Ala Pro Thr Asp Ser Val Asp Val Pro Arg Tyr Glu Arg
 100 105 110
 Leu Val Thr Ala Gly Arg Ile Ala Thr Ala Glu Asp Arg Gln Glu Glu
 115 120 125
 Ala Ser Ala His Phe Arg Glu Ala Leu Ala Leu Trp Arg Gly Ser Ala
 130 135 140
 Leu Val Asp Val Arg Ile Gly Pro Val Leu Ser Ile Glu Val Ala Arg
 145 150 155 160
 Leu Glu Glu Ser Arg Leu Gly Val Leu Glu Arg Cys Leu Glu Ala Asp
 165 170 175
 Leu Arg Leu Gly Arg His Ala Glu Leu Leu Ala Glu Leu Thr Glu Leu
 180 185 190
 Thr Gly Arg His Pro Leu His Glu Gly Leu His Ala Gln Cys Met Thr
 195 200 205
 Ala Leu Tyr Arg Ala Gly Arg Ser Trp Gln Ala Leu Asp Val Tyr Gln
 210 215 220
 Arg Leu Arg Arg Arg Leu Ala Glu Glu Leu Gly Leu Ser Pro Ser Pro
 225 230 235 240
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 260 265 270

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 <212> PRT
 <213> *Streptomyces galilaeus*

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 35 40 45
 Glu Ala Ala Leu Asp Leu Arg Ile Ala Ala Gly Ala His Ser Arg Arg
 50 55 60
 Phe Glu Ser Lys Phe Ala Arg His Ile Gly Val Arg Lys Ala His Leu
 65 70 75 80
 Val Asn Ser Gly Ser Ser Ala Asn Leu Leu Ala Leu Ser Ala Leu Thr
 85 90 95

Ser Pro Arg Leu Gly Glu Gln Arg Leu Arg Pro Gly Asp Glu Val Ile
 100 105 110
 Thr Val Ala Gly Gly Phe Pro Thr Thr Val Asn Pro Ile Leu Gln Asn
 115 120 125
 Gly Leu Thr Pro Val Phe Val Asp Leu Glu Leu Gly Thr Tyr Asn Thr
 130 135 140
 Thr Val Glu His Val Arg Ala Ala Ile Ser Asp Arg Thr Arg Ala Ile
 145 150 155 160
 Met Ile Ala His Thr Leu Gly Asn Pro Tyr Gln Val Ala Glu Ile Gln
 165 170 175
 Gln Leu Ala Thr Glu His Glu Leu Phe Leu Ile Glu Asp Asn Cys Asp
 180 185 190
 Ala Val Gly Ser Thr Tyr Gln Gly Arg Met Thr Gly Thr Phe Gly Asp
 195 200 205
 Leu Ala Thr Val Ser Phe Tyr Pro Ala His His Ile Thr Thr Gly Glu
 210 215 220
 Gly Gly Cys Val Leu Thr Arg Asn Leu Glu Leu Ala Arg Ile Val Glu
 225 230 235 240
 Ser Phe Arg Asp Trp Gly Arg Asp Cys Trp Cys Glu Pro Gly Glu Asp
 245 250 255
 Asn Thr Cys Leu Lys Arg Phe Asp Tyr Gln Leu Gly Asn Leu Pro Lys
 260 265 270
 Gly Tyr Asp His Lys Tyr Ile Phe Ser His Ile Gly Tyr Asn Leu Lys
 275 280 285
 Ala Thr Asp Leu Gln Gly Ala Leu Ala Leu Ser Gln Leu Asn Lys Leu
 290 295 300
 Pro Glu Phe Gly Ala Ala Arg Arg Asn Trp Gln Arg Leu Arg Asp
 305 310 315 320
 Gly Leu Ala Asp Val Pro Gly Leu Leu Leu Pro Val Ala Thr Pro Gly
 325 330 335
 Ser Asp Pro Ser Trp Phe Gly Phe Val Ile Thr Val Leu Pro Asp Ala
 340 345 350
 Thr Tyr Thr Arg Arg Asp Leu Val Ala Phe Leu Glu Glu Arg Arg Ile
 355 360 365
 Gly Thr Arg Arg Leu Phe Gly Gly Asn Leu Thr Arg His Pro Ala Tyr
 370 375 380
 Leu Gly Thr Pro His Arg Val Ala Gly Asp Leu Arg Asn Ser Asp Ile
 385 390 395 400

Ile Thr Glu Gln Ser Phe Trp Ile Gly Val Tyr Pro Gly Ile Thr Glu
 405 410 415

Glu Met Thr Asp Tyr Met Arg Glu Ser Ile Val Glu Phe Val Thr Lys
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Asn Gly

<210> 4
 <211> 329
 <212> PRT
 <213> *Streptomyces galilaeus*

<400> 4
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Cys Ala Asp Ile Ala Val Arg Arg Ile Leu Pro Ala Ile Val Glu His
 20 25 30

Pro Ser Val Arg Leu Val Ala Leu Ala Ser Arg Asp Gly Ala Arg Ala
 35 40 45

Glu Arg Leu Ala Ala Arg Phe Gly Cys Ala Ala Val Thr Gly Tyr Lys
 50 55 60

Ala Leu Leu Asp Arg Glu Asp Ile Asn Ala Val Tyr Val Pro Leu Pro
 65 70 75 80

Pro Gly Met His His Glu Trp Val Thr Glu Ala Leu Thr Ala Gly Lys
 85 90 95

His Val Leu Val Glu Lys Pro Leu Ser Thr Thr Tyr Ala Gln Ser Val
 100 105 110

Asp Leu Val Ala Met Ala Gly Arg Leu Gly Leu Ala Leu Thr Glu Asn
 115 120 125

Phe Met Phe Leu His His Ser Gln His Glu Ala Val Arg Ala Met Thr
 130 135 140

Gly Glu Ile Gly Glu Leu Arg Val Phe Thr Ser Ser Phe Gly Val Pro
 145 150 155 160

Pro Pro His Pro Ser Ser Phe Arg His Asp Ala Arg Leu Gly Gly Gly
 165 170 175

Ala Leu Leu Asp Val Gly Val Tyr Pro Leu Arg Ala Ala Gln Leu His
 180 185 190

Leu Ala Gly Glu Leu Asp Val Leu Gly Ala Cys Leu Arg Val Asp Glu
 195 200 205

Ala Thr Gly Val Asp Val Ala Gly Ser Ala Leu Leu Ser Thr Ala Thr
 210 215 220

Gly Val Thr Ala Gln Leu Asp Phe Gly Phe Gln His Ala Tyr Arg Ser
 225 230 235 240
 Val Tyr Ala Leu Trp Gly Ser Arg Gly Arg Leu Ser Val Pro Arg Ala
 245 250 255
 Phe Thr Pro Pro Arg Glu His Arg Pro Val Val Arg Ile Glu Gln Gln
 260 265 270
 Asp Arg Leu Thr Glu Val Thr Leu Pro Ala Asp His Gln Val Gly Asn
 275 280 285
 Ala Leu Asp Ala Phe Ala Ser Ala Val His Ser Glu Thr Val Arg Ala
 290 295 300
 Ser Leu Gly Glu Ala Leu Leu Arg Gln Ala Leu Leu Val Glu Gln Val
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 Arg Lys Ala Ala Arg Val Val Ser Gly
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<210> 5
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 <212> PRT
 <213> *Streptomyces galilaeus*

<400> 5
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 20 25 30
 Val Thr Val Val Asp Leu Leu Thr Tyr Ala Gly Asp Thr Gly Asn Leu
 35 40 45
 Pro Leu Ala Asp Pro Arg Leu Asp Phe Arg Arg Leu Asp Ile Arg Asp
 50 55 60
 Leu Asp Ala Leu Leu Thr Val Val Pro Gly His Asp Ala Val Val His
 65 70 75 80
 Phe Ala Ala Glu Thr His Val Asp Arg Ser Leu Ser Glu Pro Ala Glu
 85 90 95
 Phe Val Arg Thr Asn Val Leu Gly Thr Gln Ser Leu Leu Glu Ala Ser
 100 105 110
 Leu Arg Gly Gly Val Gly Thr Phe Val His Val Ser Thr Asp Glu Val
 115 120 125
 Tyr Gly Ser Ile Ala Gln Gly Thr Trp Thr Glu Glu Ala Pro Leu Leu
 130 135 140
 Pro Asn Ser Pro Tyr Ala Ala Ser Lys Ala Gly Ser Asp Leu Val Ala
 145 150 155 160

Arg Ser Tyr Trp Arg Thr His Gly Leu Asp Val Arg Thr Thr Arg Cys
 165 170 175
 Ala Asn Asn Tyr Gly Pro Arg Gln His Pro Glu Lys Leu Ile Pro Leu
 180 185 190
 Phe Val Thr Glu Leu Leu Ala Gly Arg Pro Val Pro Leu Tyr Gly Asp
 195 200 205
 Gly Gly Asn Val Arg Glu Trp Leu His Val Asp Asp His Cys Arg Ala
 210 215 220
 Val His Ala Val Leu Thr Gly Gly Arg Pro Gly Glu Ile Tyr Asn Ile
 225 230 235 240
 Gly Gly Gly Thr His Leu Thr Asn Arg Glu Met Thr Ala Lys Leu Leu
 245 250 255
 Ala Leu Cys Gly Thr Asp Trp Ser Arg Val Arg Gln Val Pro Asp Arg
 260 265 270
 Lys Gly His Asp Leu Arg Tyr Ala Val Asp Asp Thr Lys Ile Arg Glu
 275 280 285
 Glu Leu Gly Tyr Arg Pro Leu Arg Ser Leu Asp Asp Gly Leu Arg Glu
 290 295 300
 Val Val Asp Trp Tyr Arg Asp Arg Gln Thr His Arg Pro Glu Pro Ala
 305 310 315 320
 Glu Arg Val

<210> 6
 <211> 443
 <212> PRT
 <213> *Streptomyces galilaeus*

<400> 6
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 Ser Val Pro Leu Ala Trp Ala Leu Arg Ala Ala Gly His Glu Val Arg
 20 25 30
 Val Ala Ser Gln Pro Ala Leu Thr Ala Ser Ile Thr Ala Ala Gly Leu
 35 40 45
 Thr Ala Val Pro Val Gly Ala Asp Pro Arg Leu Asp Glu Met Val Lys
 50 55 60
 Gly Val Gly Asp Ala Val Leu Ser His His Ala Asp Gln Ser Leu Asp
 65 70 75 80
 Ala Asp Thr Pro Gly Gln Leu Thr Pro Ala Phe Leu Gln Gly Trp Asp
 85 90 95

Thr Met Met Thr Ala Thr Phe Tyr Thr Leu Ile Asn Asp Asp Pro Met
 100 105 110
 Val Asp Asp Leu Val Ala Phe Ala Arg Gly Trp Glu Pro Asp Leu Ile
 115 120 125
 Leu Trp Glu Pro Phe Thr Phe Ala Gly Ala Val Ala Ala Lys Val Thr
 130 135 140
 Gly Ala Ala His Ala Arg Leu Leu Ser Phe Pro Asp Leu Phe Met Ser
 145 150 155 160
 Met Arg Arg Ala Tyr Leu Ala Gln Leu Gly Ala Ala Pro Ala Gly Pro
 165 170 175
 Ala Gly Gly Asn Gly Thr Thr His Pro Asp Asp Ser Leu Gly Gln Trp
 180 185 190
 Leu Glu Trp Thr Leu Gly Arg Tyr Gly Val Pro Phe Asp Glu Glu Ala
 195 200 205
 Val Thr Gly Gln Trp Ser Val Asp Gln Val Pro Arg Ser Phe Arg Pro
 210 215 220
 Pro Ser Asp Arg Pro Val Val Gly Met Arg Tyr Val Pro Tyr Asn Gly
 225 230 235 240
 Pro Gly Pro Ala Val Val Pro Asp Trp Leu Arg Val Pro Pro Thr Arg
 245 250 255
 Pro Arg Val Cys Val Thr Leu Gly Met Thr Ala Arg Thr Ser Glu Phe
 260 265 270
 Pro Asn Ala Val Pro Val Asp Leu Val Leu Lys Ala Val Glu Gly Leu
 275 280 285
 Asp Ile Glu Val Val Ala Thr Leu Asp Ala Glu Glu Arg Ala Leu Leu
 290 295 300
 Thr His Val Pro Asp Asn Val Arg Leu Val Asp His Val Pro Leu His
 305 310 315 320
 Ala Leu Leu Pro Thr Cys Ala Ala Ile Val His His Gly Gly Ala Gly
 325 330 335
 Thr Trp Ser Thr Ala Leu Val Glu Gly Val Pro Gln Ile Ala Met Gly
 340 345 350
 Trp Ile Trp Asp Ala Ile Asp Arg Ala Gln Arg Gln Gln Ala Leu Gly
 355 360 365
 Ala Gly Leu His Leu Pro Ser His Glu Val Thr Val Glu Gly Leu Arg
 370 375 380
 Gly Arg Leu Val Arg Leu Leu Asp Glu Pro Ser Phe Thr Ala Ala Ala
 385 390 395 400

Ala Arg Leu Arg Ala Glu Ala Glu Ser Glu Pro Thr Pro Ala Gln Val
 405 410 415

Val Pro Val Leu Glu Arg Leu Thr Ala Gln His Arg Ala Arg Glu Pro
 420 425 430

Arg Arg Pro Gly Gly Thr Ser Pro Cys Val Ser
 435 440

<210> 7
 <211> 443
 <212> PRT
 <213> *Streptomyces galilaeus*

<400> 7
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Ser Glu Leu Gly Arg His Leu Leu Thr Ala Arg Gly Phe His Trp Ile
 20 25 30

Tyr Gly Thr Ser Gly Asp Pro Tyr Ala Leu Thr Leu Arg Ala Glu Ser
 35 40 45

Asp Asp Pro Ala Leu Leu Thr Arg Arg Ile Arg Glu Ala Gly Thr Pro
 50 55 60

Leu Trp Gln Ser Thr Thr Gly Ala Trp Val Thr Gly Arg His Gly Val
 65 70 75 80

Ala Ala Glu Ala Leu Ala Asp Pro Arg Leu Ala Leu Arg His Ala Asp
 85 90 95

Leu Pro Gly Pro Gln Arg His Val Phe Ser Asp Ala Trp Ser Asn Pro
 100 105 110

Gln Leu Cys His Ile Ile Pro Leu Asp Arg Ala Phe Leu His Ala Ser
 115 120 125

Asp Ala Asp His Thr Arg Trp Ala Arg Ser Ala Ser Ala Val Leu Gly
 130 135 140

Ser Ala Gly Gly Ala Pro Ala Glu Gly Val Arg Glu His Ala Gly Arg
 145 150 155 160

Val His Arg Glu Ala Ala Asp Arg Thr Gly Asp Ser Phe Asp Leu Met
 165 170 175

Ala Asp Tyr Ser Arg Pro Val Ala Thr Glu Ala Ala Glu Leu Leu
 180 185 190

Gly Val Pro Ala Ala Gln Arg Glu Arg Phe Ala Ala Thr Cys Leu Ala
 195 200 205

Leu Gly Val Ala Leu Asp Ala Ala Leu Cys Pro Gln Pro Leu Ala Val
 210 215 220

Thr Arg Arg Leu Thr Glu Ala Val Glu Asp Val Arg Ala Leu Val Gly
 225 230 235 240

 Asp Leu Val Glu Ala Arg Arg Thr Gln Pro Gly Asp Asp Leu Leu Ser
 245 250 255

 Ala Val Leu His Ala Gly Ser Ser Ala Ala Ser Ala Gly Gln Asp Ala
 260 265 270

 Leu Ala Val Gly Val Leu Thr Ala Val Val Gly Val Glu Val Thr Ala
 275 280 285

 Gly Leu Ile Asn Asn Thr Leu Glu Ser Leu Leu Thr Arg Pro Val Gln
 290 295 300

 Trp Ala Arg Leu Gly Glu Asn Pro Glu Leu Ala Ala Gly Ala Val Glu
 305 310 315 320

 Glu Ala Leu Arg Phe Ala Pro Pro Val Arg Leu Glu Ser Arg Ile Ala
 325 330 335

 Ala Glu Asp Leu Thr Leu Gly Gly Gln Asp Leu Pro Ala Gly Ala Gln
 340 345 350

 Val Val Val His Val Gly Ala Ala Asn Arg Asp Pro Glu Ala Phe Leu
 355 360 365

 Ala Pro Asp His Phe Asp Leu Asp Arg Pro Ala Gly Gln Gly Gln Leu
 370 375 380

 Ser Leu Ser Gly Pro His Thr Ala Leu Phe Gly Ala Phe Ala Arg Leu
 385 390 395 400

 Gln Ala Glu Thr Ala Val Arg Thr Leu Arg Glu Arg Arg Pro Val Leu
 405 410 415

 Ala Pro Ala Gly Ala Val Leu Arg Arg Met Arg Ser Pro Val Leu Gly
 420 425 430

 Ala Val Leu Arg Phe Pro Leu Thr Thr Ser Ala
 435 440

<210> 8
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 <212> PRT
 <213> *Streptomyces galilaeus*

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 Ile Gly Arg Ala Thr Ala His Ala Phe Ala Asp Arg Gly Asp Arg Val
 35 40 45

Leu	Val	Val	Gly	Arg	Thr	Ala	Ala	Thr	Leu	Ala	Gly	Thr	Ala	Glu	Gly
50						55			60						
His	Pro	Gly	Ile	Ser	Val	Leu	Thr	Ala	Asp	Leu	Thr	Asp	Pro	Asp	Gly
65					70				75				80		
Pro	Arg	Ala	Ile	Thr	Asp	Ala	Ala	Leu	Asp	Ala	Leu	Gly	Arg	Ile	Asp
				85				90					95		
Val	Leu	Val	Asn	Asn	Ala	Ala	Thr	Gly	Gly	Phe	Ala	Gly	Leu	Ala	Glu
					100			105				110			
Thr	Glu	Pro	Glu	Ala	Ala	Arg	Glu	Gln	Phe	Asp	Ser	Asn	Leu	Leu	Ala
				115			120				125				
Pro	Leu	Leu	Leu	Thr	Arg	Gln	Thr	Leu	Asp	Ala	Leu	Ser	Ala	Asp	Gly
				130			135				140				
Gly	Gly	Thr	Val	Leu	Asn	Ile	Gly	Ser	Ala	Gly	Ala	Leu	Gly	Arg	Arg
145					150				155			160			
Ala	Trp	Pro	Gln	Asn	Gly	Val	Tyr	Gly	Ala	Ala	Lys	Ala	Gly	Leu	Asp
					165			170				175			
Phe	Leu	Thr	Arg	Thr	Trp	Ala	Val	Glu	Leu	Ala	Pro	Arg	Gly	Ile	Arg
					180			185				190			
Val	Leu	Gly	Leu	Ala	Pro	Gly	Val	Ile	Asp	Thr	Gly	Ile	Gly	Glu	Arg
					195			200				205			
Ser	Gly	Met	Ser	Arg	Glu	Ala	Tyr	Ala	Gly	Phe	Leu	Gly	Gln	Ile	Ala
					210			215				220			
Ala	Arg	Val	Pro	Ala	Gly	Arg	Val	Gly	Arg	Pro	Glu	Asp	Ile	Ala	Trp
					225			230			235			240	
Trp	Ala	Val	Gln	Leu	Ala	Asp	Pro	Arg	Ala	Ala	Tyr	Ala	Thr	Gly	Ala
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<213> <i>Streptomyces galilaeus</i>															
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Gln	His	Phe	Tyr	Ala	Arg	Gln	Met	Arg	Tyr	Leu	Asp	Ser	Gly	Glu	Ala
					20			25				30			
Glu	Thr	Trp	Ala	Gly	Thr	Phe	Thr	Glu	Asp	Gly	Ser	Phe	Ala	Pro	Pro
					35			40				45			

Ser	Leu	Pro	Glu	Pro	Val	Arg	Gly	Arg	Pro	Leu	Leu	Ala	Glu	Gly	Ala
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Arg	Asn	Ala	Ala	Ala	Gly	Leu	Ala	Ala	Ala	Arg	Glu	Thr	His	Arg	His
65						70				75				80	
Trp	Val	Gly	Met	Leu	Thr	Val	Thr	Pro	Ala	Asp	Asp	Gly	Ser	Leu	Thr
						85				90				95	
Ala	Glu	Ser	Leu	Val	Ser	Ile	Val	Ala	Val	Ala	Gln	Gly	Gly	Pro	Ala
						100				105				110	
Arg	Leu	His	Leu	Val	Cys	Thr	Cys	Arg	Asp	Val	Leu	Val	Arg	Glu	Gly
						115				120				125	
Gly	Arg	Leu	Leu	Val	Arg	Glu	Arg	Val	Val	Thr	Arg	Asp	Asp	Arg	Pro
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<210> 10

<211> 259

<212> PRT

<213> *Streptomyces galilaeus*

<400> 10

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Pro	Asp	Pro	Val	Val	His	Asp	Val	Leu	Gly	Pro	Lys	Glu	Ala	Ala	Thr
					20			25						30	

His	Met	Ser	Glu	Glu	Met	Arg	Glu	His	Phe	Gly	Ile	Asp	Phe	Asp	Pro
					35			40						45	

Ala	Glu	Leu	Pro	Glu	Gly	Glu	Phe	Leu	Ser	Leu	Asp	Arg	Leu	Gln	Leu
								55				60			

Thr	Thr	His	Thr	Gly	Thr	His	Val	Asp	Ala	Pro	Ser	His	Tyr	Gly	Thr
					65			70			75			80	

Arg	Ala	Ala	Tyr	Arg	Asp	Gly	Pro	Pro	Arg	His	Ile	Asp	Glu	Met	Pro
					85					90				95	

Leu	Asp	Trp	Phe	Phe	Arg	Pro	Ala	Val	Val	Leu	Asp	Leu	Ser	Asp	Gln
					100					105				110	

Gly	Thr	Gly	Ala	Val	Gly	Ala	Asp	Val	Leu	Arg	Arg	Glu	Met	Asp	Arg
					115			120				125			

Ile	Gly	His	Thr	Pro	Ser	Pro	Met	Asp	Ile	Val	Leu	Leu	Arg	Thr	Gly
					130			135				140			

Ala	Asp	Ala	Trp	Ala	Gly	Thr	Pro	Lys	Tyr	Phe	Thr	Asp	Phe	Thr	Gly
					145			150			155			160	

Leu	Asp	Gly	Ser	Ala	Val	His	Leu	Leu	Asp	Leu	Gly	Val	Arg	Val	
					165			170			175				

Ile	Gly	Thr	Asp	Ala	Phe	Ser	Leu	Asp	Ala	Pro	Phe	Gly	Asp	Ile	Ile
180								185						190	
Thr	Arg	Tyr	Arg	Ala	Thr	Gly	Asp	Pro	Ser	Val	Leu	Trp	Pro	Ala	His
195							200					205			
Val	Ile	Gly	Arg	Asp	Arg	Glu	Tyr	Cys	Gln	Val	Glu	Arg	Leu	Ala	Gly
210					215						220				
Leu	Asp	Arg	Leu	Pro	Ala	Ala	His	Gly	Phe	Arg	Val	Ala	Cys	Phe	Pro
225					230				235			240			
Val	Arg	Ile	Ala	Gly	Ala	Gly	Trp	Thr	Arg	Ala	Val	Ala	Leu		
					245			250			255				
Val	Asp	Glu													

<210> 11
 <211> 238
 <212> PRT
 <213> *Streptomyces galilaeus*

<400> 11																
Met	Tyr	Gly	Arg	Glu	Leu	Ala	Asp	Val	Tyr	Glu	Ala	Ile	Tyr	Arg	Ser	
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Arg	Gly	Lys	Asp	Trp	Gly	Gln	Glu	Ala	Ala	Asp	Val	Ser	Arg	Ile	Ile	
					20			25					30			
Thr	Glu	Arg	Arg	Pro	Gly	Ala	Gly	Ser	Leu	Leu	Asp	Val	Ala	Cys	Gly	
					35			40					45			
Thr	Gly	Ala	His	Leu	Ser	Val	Phe	Ser	Thr	Leu	Phe	Glu	Val	Ala	Glu	
					50			55				60				
Gly	Leu	Glu	Ile	Ala	Glu	Pro	Met	Arg	Arg	Leu	Ala	Glu	Gln	Arg	Leu	
					65			70			75			80		
Pro	Gly	Thr	Thr	Val	His	Ala	Gly	Asp	Met	Arg	Asp	Phe	Arg	Leu	Pro	
					85				90				95			
Arg	Thr	Tyr	Asp	Ala	Val	Ser	Cys	Met	Phe	Cys	Ala	Ile	Gly	Tyr	Leu	
					100				105				110			
Glu	Thr	Leu	Asp	Asp	Met	Arg	Ala	Ala	Val	Arg	Ser	Met	Ala	Ala	His	
					115				120			125				
Leu	Glu	Pro	Gly	Gly	Val	Leu	Val	Val	Glu	Pro	Trp	Trp	Phe	Pro	Glu	
					130			135				140				
Asn	Phe	Ile	Glu	Gly	Tyr	Val	Ala	Gly	Asp	Leu	Ala	Arg	Glu	Glu	His	
						145		150			155			160		
Arg	Thr	Ile	Ala	Arg	Ile	Ser	His	Thr	Thr	Arg	Lys	Gly	Arg	Ala	Thr	
						165			170			175				

Arg Met Glu Val Arg Phe Thr Val Gly Asp Ala Ala Gly Ile Gln Gln
 180 185 190

Phe Thr Glu Ile Asp Val Leu Thr Leu Phe Thr Arg Asp Glu Tyr Thr
 195 200 205

Ala Ala Phe Thr Asp Ala Gly Cys Ser Val Glu Phe Leu Glu Asp Gly
 210 215 220

Pro Thr Gly Arg Gly Leu Phe Val Gly Val Arg Glu Gln Arg
 225 230 235

<210> 12

<211> 291

<212> PRT

<213> *Streptomyces galilaeus*

<400> 12

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Ile Thr Val Ser Val Ser Lys Gln Leu Leu Pro Val Gly Asp Lys Pro
 20 25 30

Met Ile Tyr Tyr Pro Leu Ser Val Leu Met Leu Ala Asp Ile Arg Glu
 35 40 45

Ile Leu Leu Ile Cys Thr Glu Arg Asp Leu Glu Gln Phe Arg Arg Leu
 50 55 60

Leu Gly Asp Gly Ser Gln Leu Gly Leu Arg Ile Asp Tyr Ala Val Gln
 65 70 75 80

Asn Arg Pro Ala Gly Leu Ala Asp Ala Phe Val Ile Gly Ala Asp His
 85 90 95

Val Gly Asp Asp Asp Val Ala Leu Val Leu Gly Asp Asn Ile Phe His
 100 105 110

Gly His His Phe Tyr Asp Leu Leu Gln Ser Asn Val His Asp Val Gln
 115 120 125

Gly Cys Val Leu Phe Gly Tyr Pro Val Glu Asp Pro Glu Arg Tyr Gly
 130 135 140

Val Gly Glu Thr Asp Ala Ser Gly Gln Leu Val Ser Leu Glu Glu Lys
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